REMARKS

This is intended as a full and complete response to the Office Action dated February 25, 2004, having a shortened statutory period for response set to expire on May 25, 2004. Please reconsider the claims pending in the application for reasons discussed below.

I.   Rejection of claims 1-8, 10, 14, 16, 17, and 19-21 under 35 USC § 102

Claims 1-8, 10, 14, 16, 17, and 19-21 stand rejected under 35 USC § 102(b) as being anticipated by Vinod et al. ("Video Shot Analysis using Efficient Multiple Object Tracking", V.V. Vinod and Hiroshi Murase, NTT Basic Research Labs, 3-1 Morinosato-Wakamiya Atsugi-shi, Kanagawa, 243-01 Japan, IEEE, April 1991) (Vinod). Applicant respectfully traverses the rejection.

Vinod discloses a method for analyzing video shots by tracking interesting objects in the video. Tracking employs efficient object search using upper bound pruning and statistical prediction of search area. The tracks are analyzed to identify representative frames in shot and to build a concise representation. (Vinod, Abstract)

The Examiner's attention is directed to the fact that Vinod fails to disclose "determining a route comprising a trajectory of a first object having the same trajectory of at least one other object" as recited in claim 1 or "determining spatial patterns from said extracted motion information, where said spatial patterns comprise a route determined from said trajectory common to at least two objects" as recited in claim 16. Specifically, Applicant's independent claims positively recite:

1.   A method for performing motion analysis on a sequence of images, where said sequence of images captures a plurality of objects each moving along a trajectory in an imaged area, said method comprising:

extracting motion information for each of said plurality of objects contained in said sequence of images; and

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determining spatial patterns from said extracted motion information, where said determining step comprises determining a route comprising a trajectory of a first object having the same trajectory of at least one other object. (emphasis added)

16.   A system for performing motion analysis on a sequence of images, the apparatus comprising:

a motion extraction system for receiving said sequence of images capturing a plurality of objects each moving along a trajectory, and extracting motion information for each of said plurality of objects over said sequence of images; and

a motion mining system for determining spatial patterns from said extracted motion information, where said spatial patterns comprise a route determined from said trajectory common to at least two objects. (emphasis added)

Applicant's invention is directed to a method and apparatus for performing motion analysis on a sequence of images. Initially, a sequence of images is received from a video source. The sequence of images captures a plurality of objects each moving along a trajectory in an area imaged by the video source. Motion information is extracted from the sequence of images for each of the plurality of objects. Spatial patterns are then determined from the extracted motion information. The motion information is used to determine routes. Routes represent the grouping or clustering of two or more trajectories having a common path.

In contrast, Vinod only teaches tracking the movement of objects. Vinod does not teach determining a route comprising a trajectory of a first object having the same trajectory of at least one other object as positively claimed by Applicant.

In fact, the Examiner conceded that Vinod does not teach the ability to obtain a trajectory of a first object having the same trajectory of at least one other object. However, the Examiner alleged that "Inherently, one skilled in the art can analyze this trajectory map obtain information such as how many objects are moving, which ones start and/or end at the same positions, which ones have the same/different trajectories, etc." (Office Action, page 3)

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Applicant respectfully traverses Examiner's use of an inherency argument to reject the present claims. The Examiner's reliance on inherency is overreaching. "Inherency may not be established by probabilities or possibilities regarding what may have resulted in the prior art." In re Oelrich, 666 F.2d 578, 212 USPQ 323, 326 (CCPA 1981). Notably, "extrinsic evidence must make clear that the missing descriptive matter is necessarily present In the thing described in the reference, and that it would be so recognized by persons of ordinary skill. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." In re Roberston, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (internal quotations omitted) (emphasis added). The Examiner provided no evidence that the system of Vinod is necessarily configured such that a trajectory map must necessarily be used to obtain a route that is determined from said trajectory common to at least two objects.

Therefore, the Applicant submits that claims 1 and 16 as they now stand, fully satisfy the requirements of 35 U.S.C. §102 and is patentable thereunder. Claims 2-8, 10, 14, 17, and 19-21 are patentable at least by virtue of depending from their respective base claim. Withdrawal of the rejection is respectfully requested.

II.   Rejection of claims 9, 15, 18, and 22-25 under 35 USC § 103

A.   Claim 9

Claim 9 stands rejected under 35 USC § 103(a) as being obvious over Vinod In view of Weil et al. (U.S. Patent No. 6,177,885, issued January 23, 2001) (Weil). Applicant respectfully disagrees.

As stated previously in section I. of this response, Vinod fails to disclose "determining a route comprising a trajectory of a first object having the same trajectory of at least one other object", as positively recited by the Applicant In claim 1. Weil teaches a traffic Incident detection system that includes both the collection and analysis of traffic data and employs a time-indexed traffic anomaly detection algorithm which partitions time into categories of "type of day," and "time of day". Using this partition, a fuzzy neuromorphic, unsupervised learning algorithm calibrates fuzzy sets as "normal" and "abnormal" for a plurality of traffic descriptors. (Weil, Abstract)

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Weil fails to cure the deficiencies of Vinod. Neither of the references cited by the Examiner discloses "determining a route comprising a trajectory of a first object having the same trajectory of at least one other object". Thus, the Examiner has failed to present a prima facie case of obviousness in combining Vinod with Weil to arrive at the claimed invention of Applicant's claim 9. Therefore, the Applicant submits that claim 9 as it now stands, fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder. Withdrawal of the rejection is respectfully requested.

B.   Claims 15, 18, and 22-25

Claims 15, 18, and 22-25 stand rejected under 35 USC § 103(a) as being obvious over Vinod in view of Cheng et al. ("Querying Video Contents by Motion Example", Pu-Jien Cheng and Wei-Pang Yang, Department of Computer and Information Science, National Chiao Tung University, Hsinchin, Taiwan, R.O.C., IEEE, May 2000. Applicant respectfully disagrees.

Applicant asserts that Cheng does not qualify as prior art. Applicant filed Provisional Application No. 60/190,819, on March 21, 2000. The present application claims priority from this provisional application. Since the provisional application was filed before the publication date of the Cheng reference (May 2000), Cheng may not properly be used as prior art.

Therefore, the Applicant submits that claims 15, 18, and 22-25 as they now stand, fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder. Withdrawal of the rejection is respectfully requested.

III.   Allowable Subject Matter

Claims 11-13 were objected to by the Examiner as being dependent upon a rejected base claim. Claim 11 has been amended to place it in independent form. Therefore, Applicant submits that claims 11-13 are in allowable form. Withdrawal of the objection is respectfully requested.

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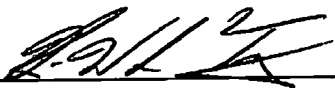
Conclusion

Thus, the Applicant submits that all of these claims now fully satisfy the requirements of 35 U.S.C. §102 and 35 U.S.C. §103. Consequently, the Applicant believes that all these claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring the issuance of a final action in any of the claims now pending in the application, it is requested that the Examiner telephone <u>Mr. Kin-Wah Tong, Esq.</u> at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

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